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180457

FIVE-YEAR REVIEW REPORT

Second Five-Year Review Report

for

Twin Cities Air Force Reserve Base, Small Arms Range Landfill

Minneapolis, Minnesota

July 2003

PREPARED BY:

U.S. EPA REGION 5
Chicago, Illinois

Approved by:

Wm. E. Muno

William E. Muno, Director
Superfund Division

Date:

7/31/03

Five-Year Review Report

Table of Contents

List of Acronyms

ACRONYM	NAME OR TERM
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA/SARA	Comprehensive Environmental Response, Compensation and Liability Act/Superfund Amendments and Reauthorization Act of 1986 (Superfund)
CL	Compliance Level
COC	Contaminant of Concern
FFA	Federal Facility Agreement
FS	Feasibility Study
FSP	Field Sampling Plan
HRL	Health Risk Limit
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDH	Minnesota Department of Health
MSP IAP	Minneapolis/St. Paul International Airport
MPCA	Minnesota Pollution Control Agency
MW	Monitoring Well
NCP	National Contingency Plan
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
O&M	Operation and Maintenance
QAPP	Quality Assurance Project Plan
RAL	Recommended Allowable Limit
ROD	Record of Decision
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RPM	Remedial Project Manager
SARL	Small Arms Range Landfill
SVOC	Semi-volatile Organic Compound
TBC	To Be Considered
TCAFR	Twin Cities Air Force Reserve
TCL	Target Compound List
TDS	Total Dissolved Solids
TL	Trigger Level
USAF	United States Air Force
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Executive Summary

This report documents the second Five-Year Review for the Small Arms Range Landfill (SARL), located at the Minneapolis-St. Paul International Airport Air Force Reserve Station (Twin Cities Air Force Reserve). In 2002, Braun Intertec Corporation, consultant for the Twin Cities Air Force Reserve, completed confirmatory sampling and analysis of groundwater and surface water at the SARL as part of the second Five Year Review (as documented in the report 2002 Ten-Year Review, Small Arms Range Landfill, 934th Airlift Wing, Minneapolis-St. Paul IAP ARS, prepared for 934th LSS/LGC by Braun Intertec Corporation, July 30, 2002), conducted as part of the second Five Year Review pursuant to the requirements of CERCLA/SARA and the NCP. The findings indicate that the SARL Site remedy continues to be protective of human health and the environment. The next Five-Year Report is due five years from the date of signature of this Second Five-Year Review Report.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Twin Cities Air Force Reserve Base (Small Arms Firing Range)		
EPA ID *(from WasteLAN)*: MN8570024275		
Region: 5	**State:** MN	**City/County:** Minneapolis/Hennepin
SITE STATUS		
NPL status: ☐Final x Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☐ Under Construction x Operating ☐ Complete		
Multiple OUs?* ☐ YES x NO	**Construction completion date:** 02/05/1993 (PCOR 09/24/92)	
Has site been put into reuse? ☐ YES x NO		
REVIEW STATUS		
Lead agency: ☐ EPA ☐ State ☐ Tribe x **Other Federal Facility** (U.S. Air Force Reserve)		
Author name: Tom Barounis		
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA Region 5	
Review period: May 2002 to June 2003		
Date(s) of site inspection: 05/07-08/2002 and 03/31/03		

Type of review:	X Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State Tribe-lead ☐ Regional Discretion
Review number: ☐ 1 (first) X 2 (second) ☐ 3 (third) ☐ Other (specify)	
Triggering action: ☐ Actual RA Onsite Construction at OF #____ ☐ Actual RA Start at OU#____ ☐ Construction Completion X Previous Five-Year Review Report ☐ Other (specify)	
Triggering action date ***(from WasteLAN)***: 04/02/1998	
Due date ***(five years after triggering action date)***: 04/02/2003	

* ["OU" refers to operable unit.]

Issues:

There are no current contamination issues at the site. The first Five-Year Review Report for the SARL, dated 04/02/98, concluded that the selected remedial action, consisting of natural attenuation of groundwater contamination, physical access restrictions, site maintenance and monitoring, had achieved the remediation goals set forth in the March 31, 1992 Record of Decision (ROD). The SARL was deleted from the Superfund National Priorities List (NPL) on December 16, 1996.

Recommendations and Follow-up Actions:

Two remediation goals were noted in the ROD: 1) reduce COC concentrations in the groundwater to meet the respective ARARs and ensure that groundwater migrating from the SARL to the Minnesota River does not exceed Water Quality Criteria for freshwater species; and 2) limit the potential for the SARL to be exposed directly to human receptors or local fauna. The 2002 sampling results confirmed the results of the monitoring program conducted during 1993, 1994, 1995, and 1997, which established that natural attenuation had proven to be an effective remedial agent at the SARL.

Additionally, the U.S. Air Force (USAF) has maintained, and will continue to maintain on a permanent basis, the established site access restrictions and site maintenance program. As a result, the second remediation goal of limiting the potential of direct exposure to human receptors or local fauna has also been met.

Finally, the next Five-Year Review should include water quality monitoring and confirmation of site access restrictions consistent with the May 2002 event. In the interim, the surface seals of each monitoring well should be inspected and replaced, as appropriate.

Protectiveness Statement(s):

Because the remedial actions at the Twin Cities Air Force Reserve SARL are protective, the site is protective of human health and the environment.

Other Comments: None.

Five-Year Review Report

I. Introduction

The SARL is a two acre landfill located near the Minneapolis-St. Paul International Airport (MSP IAP) (Figure 1). The site is bounded to the south by Interstate 494 and to the east by the Minnesota River and Fort Snelling State Park.. A storm water retention pond is located between the SARL and the Minnesota River, as shown on the site map (Figure 2). The SARL is within the 100 year flood plain for the Minnesota River and is prone to flooding, according to the Minnesota Department of Natural Resources. There is no residential property located with a one mile radius of the SARL.

The USAF conducted a first Five-Year Review in 1997, which documented monitoring results and concluded that natural attenuation had proven to be effective at the SARL. EPA concurred in the results of the first Five-Year Review Report prepared by the USAF and the statutory Five Year Review pursuant to CERCLA was signed by EPA Region 5 on April 4, 1998. Since the completion of the first Five-Year Review Report, the USAF conducted additional confirmatory monitoring in May 2002 as part of the second Five-Year Review (ten-year review) as required by the National Contingency Plan (NCP).

The SARL ROD established remediation criteria for eighteen contaminants of concern (COCs) for groundwater, including twelve metals five volatile organic compounds (VOCs) and one semivolatile organic compound (SVOC). The groundwater ARARs are presented in Table 1. The ROD also established trigger levels (TLs) for groundwater contaminants to evaluate the need for additional action. The trigger levels were set at two times the compliance levels (CLs) for seven metals (arsenic, beryllium, cadmium, lead, nickel, seleneium, and vanadium) and one VOC (trichloroethene). The TLs and CLs are shown in Table 2.

Finally, the ROD also established seven COCs for surface water, including six metals (beryllium, iron, lead, silver, vanadium and zinc) and one VOC (toluene). The ARARs established for surface water are shown on Table 3. TLs and CLs were not established for surface water.

The Purpose of the Review

The purpose of this Five-Year review is to determine whether the remedy at the SARL continues to be protective of human health and the environment. The methods, findings, and conclusions of this review are documented in the 2002 Ten-Year Review, Small Arms Range Landfill, 934th Airlift Wing, Minneapolis-St. Paul IAP ARS, prepared for 934th LSS/LGC by Braun Intertec Corporation, July 30, 2002 (Five-Year Review Report). In addition, the Five-Year Review report identifies issues found during the review, if any, and recommendations to address them.

Authority for Conducting the Five-Year Review

EPA is preparing this Five-Year Review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section 104 or 106, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for the unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

Who Conducted the Five-Year Review

The USAF, through its contractor, Braun Intertec, conducted all of the sampling that was required for the second five-year review. Mr. Douglas Yocum, 934th Airlift Wing, Minneapolis-St. Paul Air Reserve Station, Environmental Section and Mr. Tom Barounis, Remedial Project Manager (RPM), U.S. EPA Region 5, performed an inspection of the SARL on March 31, 2003. In addition, the EPA RPM reviewed additional documents, including the ROD and the first Five-Year Review Report. EPA completed this second Five-Year Review based upon the information obtained from these sources and activities.

Other Review Characteristics

This is the second five-year review for the SARL Site. The triggering action for this review is the completion of the first Five-Year Review of April 1998.

II. Site Chronology

Event	Date
National Priorities List Listing	7/22/87
Remedial Investigation/Feasibility Study complete	3/31/92
Record of Decision signature	3/31/92
Federal Facility Agreement	10/ /89
Remedial Design start	4/01/92
Remedial Design complete	8/25/92
Remedial Action start	8/31/92
Remedial Action complete/Preliminary Close-out Report	9/24/92
Final Closeout Report	8/29/96
Deletion from NPL	12/16/96
First Five-Year review	4/02/98

III. Background

Physical Characteristics

The SARL is located within the Mississippi Valley outwash plain of the Outwash Valley Physiographic Region. Two distinct topographic areas dominate the relief, an upland area and a bottomland (floodplain) area. The upland area is relatively flat, sloping gently eastward toward the Mississippi and Minnesota Rivers, with ground surface elevations ranging from approximately 800 to 850 feet NGVD (National Geodetic Vertical Datum). Locally, the topographic relief between the upland area and the floodplain is marked by an 80-foot escarpment in the area west of the SARL. The floodplain area ranges in elevation from approximately 690 to 730 feet NGVD. The SARL lies within the floodplain of the Minnesota River which overlies a buried bedrock valley.

The site is underlain by an unconsolidated surficial aquifer comprised of a shallow and deep aquifer. The shallow aquifer extends from the area beneath the SARL to the Minnesota River.

The shallow aquifer consists of a gravelly sand layer underlain by heterogeneous unconsolidated materials comprised of silty sand, peat, clay, silty sandy clay, and sandy clay, which generally exhibit low permeability. These low permeability materials combine to form a confining stratum that separates the underlying aquifer (deep aquifer) from the shallow aquifer. An apparent discontinuity exists in the lateral extent of the confining layer and underlying materials to the west of the site. This discontinuity is due to the presence of the St. Peter Sandstone bedrock formation in this western portion of the site. The St. Peter Sandstone has been eroded away east of the SARL, resulting in a bedrock valley that has been filled primarily by fluvial depositional processes.

Land and Resource Use

The SARL is located in the southeast quarter of the southwest quarter of the southwest quarter of Section 32, Township 28 North, Range 23 West in Hennepin County, Minneapolis, Minnesota. The site is within the boundaries of the Twin Cities Air Force Reserve property and is bounded to the south by Interstate 494, to the east by the Minnesota River and Fort Sealing Park.. The MSP IAP is to the west of the Twin Cities Air Force Reserve property. There is no residential property located within a one mile radius of the SARL.

History of Contamination

The site of the SARL was acquired by the USAF in 1955 and served as the main landfill from approximately 1963 to 1972. General refuse and industrial wastes formed the bulk of waste materials deposited at the SARL. The industrial wastes are believed to have included approximately 100 gallons of paint sludge, 800 pounds of paint filters and 100 to 200 gallons of leaded aviation gasoline (AVGAS) sludge. Between 1963 and 1969, all refuse was burned in a pit located at the southwestern edge of the landfill (see Figure 2). The SARL was closed in 1972, with native soil used to cover the fill area.

The SARL was first identified as a possible hazardous waste site in 1983 in the Phase I Installation Restoration Program Records Search report. Preliminary studies of the site indicated the presence of low concentrations of groundwater contaminants which were possibly migrating from the SARL. Based upon these preliminary studies, the site was placed on the NPL in 1987. A remedial investigation (RI) was conducted in 1988 and 1989 to further characterized the site and obtain the data necessary for an evaluation of remedial alternatives. The RI indicated that low levels of inorganic contaminants (e.g., beryllium, nickel, vanadium) had been released from the SARL to the soil and groundwater. Tables 1 and 3 present the constituents that were identified in the ROD as COCs in groundwater and surface water respectively, and Applicable or Relevant and Appropriate Requirements (ARARs) and Maximum Contaminant Level Goals (MCLGs) at the time of the ROD.

The Federal Facility Agreement (FFA), signed by the USAF and EPA in October 1989, established the procedural framework for remedial action at the site. A feasibility study (FS) was

completed in 1991 and a ROD selecting the FS preferred alternative of natural attenuation of groundwater contaminants in conjunction with access restrictions, site maintenance and monitoring, was signed by the EPA in Marc , 1992. The Minnesota Pollution Control Agency (MPCA) concurred with the ROD. The ROD stipu' ed that, at a minimum, monitoring of site groundwater and surface water quality would take place every two months for a minimum two-year period. The ROD also stated that the monitoring program could be modified, or an alternative remedial action enacted, to reflect the first year sampling results. After completing the second year of sampling, the analytical data were to be reviewed to determine requirements for future sampling work.

Initial Response

EPA did not perform any removal actions or initial remedial measures at the site.

Basis for Taking Action

The purpose of the remedy selected in the ROD was to prevent risk to human health and the environment through direct contact with landfill contaminants and to prevent risk for exposure to contaminants in the groundwater. The COCs and their respective exceedances at the time of the ROD are listed in Table 1.

IV. Remedial Actions

Remedy Selection

The Remedial Action selected for the SARL in the March 1992 (ROD) was natural attenuation of groundwater contaminants in conjunction with access restrictions, site maintenance and monitoring. The remedial action objectives were to prevent risk to humans or the environment through contact with landfill contaminants and to prevent risk to humans or environmental receptors from contaminants in groundwater.

The selected remedy established cleanup levels for the COCs in groundwater based upon the Safe Drinking Water Act MCLGs. Also established as cleanup goals were the Clean Water Act Ambient Water Quality Criteria and the State of Minnesota Recommended Allowable Limits (RALs) for drinking water contaminants.

Remedy Implementation

The ROD-required activities of site maintenance and access restrictions have been implemented by the Twin Cities Air Force Reserve. Access restrictions include access control, fencing with locked gates around the entire site and warning signs. Site maintenance includes regular inspection and maintenance of the landfill cover, the fencing and the monitoring wells.

The first year of monitoring was completed in 1993 with the results presented in the Final 1993 Annual Water Quality Report which concluded that natural attenuation was serving as an effective remedial agent at the SARL. It also concluded that the decreasing concentrations of VOCs, SVOCs and metals justified a modification of the monitoring program. EPA and MPCA approved the following modifications in May 1994:

- Monitoring MW3R and MW05 for water level only;
- Designating MW06 as the background well for the SARL;
- Reducing the sampling frequency from bi-monthly to quarterly; and
- Reducing the analyte list by eliminating five indicator parameters (calcium, magnesium, potassium, sodium and total dissolved solids (TDS).

The second year of monitoring was completed in 1994 with the results presented in the Final 1994 Annual Monitoring Report. Conclusions in this report were consistent with the prior year's report. After reviewing groundwater monitoring and historical contaminant trends, the USAF concluded that the selected remedy had effectively achieved remedial action objectives and requested that EPA initiate procedures to remove the SARL from the NPL. The SARL was deleted from the NPL on December 16, 1996.

Three additional rounds of groundwater monitoring were conducted in January, April and July 1995. All monitoring results were consistent with the 1993 and 1994 annual monitoring results The 1995 Annual Monitoring Report recommendations were consistent with those presented in the 1994 Annual Monitoring Report.

In May 1997 confirmatory monitoring was completed as part of the first Five Year Review. Monitoring results presented in the 1997 Five Year Review Report indicated that concentrations of COCs in groundwater continued to decrease and that surface water concentrations continued to fall below detection limits. The 1997 Five Year Review Report concluded that all contaminant concentrations in groundwater were in compliance with ARARs, except for one sidegradient well in which selenium was detected at a concentration of 11.7 ppb. This exceeded the MDH RAL (10.0 ppb). However, it did not exceed the Minnesota Health Risk Limits (HRLs) value of 30 ppb, which was promulgated in 1995 and which superceded the RALs.

At the time of the first Five Year Review, USAF requested that all groundwater wells used to monitor the SARL be abandoned. However, because of the CERCLA requirement for periodic five year reviews at sites where, after the completion of remedial action, wastes remain that do not allow for unrestricted use, EPA concluded that information regarding groundwater flow and concentrations would still need to be collected. In conclusion, the first Five Year Review recommended that groundwater and surface water monitoring be discontinued until the next periodic five year review.

V. Progress Since the Last Review

Data Collection

Sampling was conducted at seven monitoring wells and two surface water locations during the May 2002 event in accordance with the approved Sampling and Analysis Plan (Field Sampling Plan [FSP], Quality Assurance Project Plan [QAPP] and subsequent modifications). Groundwater samples were analyzed for Target Compound List (TCL) VOCs and TCL SVOCs, priority pollutant metals, vanadium and chloride. Surface water samples consisted of grab samples collected from the retention pond.

Field and analytical results were evaluated following the May 2002 sampling event to assure that laboratory and field quality control objectives established in the QAPP were met. All laboratory quality control procedures followed the methods detailed in the QAPP.

Water Quality Results for Groundwater

Groundwater and surface water quality results from the May 2002 sampling event are summarized in Tables 4 and 5. COCs were detected sporadically in the monitoring wells and the detected concentrations did not vary spatially in a consistent manner from historical data. With the exception of two nickel concentrations (MW06 and MW8A), all qualified COC concentrations in the groundwater samples were beneath the associated CLs, TLs and ARARs. All detected beryllium concentrations exceeded the ARAR but were qualified as blank contaminated.

Volatile Organic Compounds

There were no groundwater ARARs for VOCs exceeded in 2002.

Semi-volatile Organic Compounds

The only detected SVOC during 2002 was bis(2-ethylhexyl) phthalate in two samples (MW9A at 49 ppb and MW9B at 73 ppb. There is no ARAR for this SVOC and it was not identified as a COC in the ROD.

Inorganic Compounds

Beryllium and nickel were the only inorganic COCs detected at concentrations above an ARAR during May 2002. Six beryllium concentrations ranging from 0.24 ppb to 0.45 ppb were detected in concentrations above the MDH HRL of 0.08 ppb. These concentrations did not exceed the CL of 1.0 ppb established in the ROD and all of the detected beryllium concentrations were qualified as blank contamination.

Nickel was detected in six groundwater samples. The highest detected concentration was 300 ppb at MW8A. Nickel was also detected in samples from MW06 (73 ppb), MW7A (35 ppb), MW7B (3.6 ppb), MW8A (2.4 ppb) and MW9B (29 ppb). The nickel concentrations detected in monitoring wells MW06 and MW8A both exceeded the CL of 70 ppb established in the ROD. The MW8A concentration also exceeded the TL of 140 ppb. MW06 is a background well and MW8A is located downgradient of the retention pond. Nickel had never been detected above the CL in MW06 or MW8A during any of the previous 16 monitoring events.

Water Quality Results for Surface Water

The seven COCs established in the ROD for surface water were toluene, beryllium, iron, lead, silver, vanadium and zinc. All qualified analyte concentrations in the surface water samples were beneath the associated ARARs in 2002, except for beryllium.

Volatile Organic Compounds

Acetone was the only VOC detected in the surface water sample in May 2002. Acetone was not identified as a COC in the ROD. The current ARAR for acetone is the Minnesota HRL (700 ppb), which is well above the qualified value of 4.7 ppb.

Semi-volatile Organic Compounds

SVOCs were not detected in the surface water samples during the May 2002 event.

Inorganic Compounds

Surface water metals concentrations were all below the ARARs, except for beryllium. Both of the beryllium concentrations (0.41 ppb and 0.47 ppb) exceeded the HRL of 0.08 ppb. However, both concentrations were qualified as blank contamination.

Analysis

The data collected during the 2002 monitoring period and contaminant trend analysis provided in the second Five Year Review Report confirm the conclusions of the first Five Year Review Report that the selected remedial action, natural attenuation, is effective (Braun Intertec, 2002).

As discussed in the 1994 and 1995 Annual Monitoring Reports, the observed groundwater elevations in nested monitoring wells)MW7A/MW7B, MW8A/MW8B, MW9A/MW9B) reflected and upward hydraulic gradient that made an impact to the deep aquifer from the site unlikely. The 2002 data also support an upward hydraulic gradient. The historic and May 2002 distribution of contaminant concentrations support this contention, with few to no VOC/SVOC impacts documented in the deep aquifer wells. In addition, most of the detected inorganic

parameter concentrations and exceedences were observed in shallow aquifer wells.

Based upon the flow net evaluation provided in the 1995 Annual Monitoring Report, in conjunction with historic water quality data, the analytes detected in groundwater from the deep aquifer wells originated from an upgradient source, or are possibly reflective of natural variations of inorganic parameter concentrations. Regardless, the concentrations observed in the deep wells are not likely related to the SARL.

Exceedences of the nickel CL at MW06 and MW8A were the only ARAR exceedences during the May 2002 monitoring event which were not qualified as unuseable or blank-contaminated. They were the first nickel exceedences noted at these monitoring wells and followed 15 consecutive monitoring events in which the CL had been achieved. There is no clear indication that future nickel concentrations will exceed the CL and the data do not indicate that the May 2002 exceedences merit a revised assessment regarding compliance with ARARs.

Effectiveness of Access Restrictions and Site Maintenance

Access restrictions enacted as part of the remedial action have been maintained. To date, access restrictions have met the threshold criterion of overall protection of human health and the environment by ensuring that pathways involving contact with waste materials are not complete. The site maintenance program was established to ensure that the integrity of the existing soil cover, fence and monitoring system are maintained. During the May 2002 inspection the concrete surface seals on several wells were found to be cracked, and the seals on four of the wells required replacement. The concrete seals were subsequently replaced during 2002. The March 2003 inspection of the site verified that the site has been adequately maintained and the seals on all four wells were found to be intact.

VI. Five-Year Review Process

Administrative Components

This Five Year Review is based upon the Five Year Review Report prepared by Braun Intertec for the Twin Cities Air Force Reserve (TCAFR) and upon the site inspection activities performed by EPA and TCAFR staff on March 31, 2003.

Community Involvement /Interviews

The availability of the Five Year Review Report for public review and comment was announced through public notices placed in two major newspapers of general circulation (St. Paul Pioneer Press and Minneapolis Star Tribune) on June 5, 2003. No public comments were received.

Document and Data Review

The documents and data reviewed in preparing for this Five-Year Review Report are listed in the attachment entitled "List of Documents Reviewed".

Site Inspection

The SARL was inspected by USAF and contractor staff in May 2002. Mr. Douglas Yocum, 934th Airlift Wing, Minneapolis-St. Paul Air Reserve Station, Environmental Section and Mr. Tom Barounis, Remedial Project Manager (RPM), U.S. EPA Region 5 EPA inspected the site again, in conjunction with the five-year review, on March 31, 2003. Both inspections involved observations of the physical condition of the Site, which was acceptable on both occasions.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Remedial Action Performance

The remedial actions continues to function as designed. Natural attenuation of groundwater contaminants is performing as expected and cleanup levels are being achieved. Surface water does not exhibit contaminants in excess of the established cleanup goals. Site access restrictions are in place and are being maintained.

In summary, the data gathered during the second five-year review indicate that the remedy continues to function as designed and is performing as expected.

System Operation and Maintenance

The remedy for the SARL does not include any operating systems; other than data collection for five-year reviews, Operation and Maintenance (O&M) for the SARL consists of: a) site inspections to assess the integrity of the landfill cover and the integrity of the fence and make repairs, as needed; and b) maintenance of the monitoring wells. The site inspections have been and will continue to be an effective means to ensure the effectiveness of the maintenance and access restrictions required by the remedy inspections. The monitoring wells will continue to be maintained.

Opportunities for Optimization

Since there are no operating systems at the Site, there are limited opportunities for optimization of O&M.

Early Indicators of Potential Issues

Since there are no operating systems at the Site, the only early indicators of potential issues

would be upward trends in ground water or surface water contaminant data or obvious maintenance issues such as damage to the landfill fence or cover. Groundwater and surface water trends will again be evaluated at the next five year review. Any damage to the landfill cover or fence discovered during routine inspection of the SARL will be repaired.

Implementation of Institutional Controls and Other Measures

Access controls, in the form of fencing and warning signs, are in place at the Site. These controls, along with the continued control of the property on which the SARL is located by the USAF and regularly scheduled inspections of the Site are effective measures to limit access to the Site and to maintain the integrity of the remedy.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

Changes in Standards and To Be Considered Criteria

Although the Minnesota RALs specified in the ROD have been replaced by promulgated HRLs, the specific cleanup levels for the COCs remain the same as previously. There are no standards identified in the ROD which have been revised, no newly promulgated standards and no TBCs used in selecting the cleanup levels at the site that have changed and could affect the protectiveness of the remedy.

Changes in Exposure Pathways

There have been no changes in the potential exposure pathways at the Site since the implementation of the remedy for the Site. There have been no land use changes at the Site nor are any expected in the near future.

Changes in Toxicity and Other Contaminant Characteristics

Neither the toxicity factors for the contaminants of concern nor other contaminant characteristics have changed in a way that could affect the protectiveness of the remedy.

Changes in Risk Assessment Methods

Standardized risk assessment methods have not changed in a way that could affect the protectiveness of the remedy.

Expected Progress Toward Meeting Remedial Action Objectives

The remedy for the Site is progressing as expected. Remedial Action Objectives have been met at the Site, and the monitoring programs will continue to ensure that any changes in contaminant

levels will be detected and addressed, if necessary.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There have been no newly identified human health or ecological risks, impacts from natural disasters, or any other information that has been identified that could affect the protectiveness of the remedy for the Site.

VIII. Issues

No issues have arisen since the first five-year review which currently prevent the remedy from being protective.

IX. Recommendations and Follow-up Actions

The ROD for the SARL identified two remediation goals: 1) reduce COC concentrations in the groundwater to meet the respective ARARs and ensure that groundwater migrating from the SARL to the Minnesota River does not exceed Water Quality Criteria for freshwater species; and 2) limit the potential for direct exposure of contaminants in the SARL to human receptors or local fauna. The 2002 sampling results confirmed the results of the monitoring program conducted during 1993, 1994, 1995, and 1997, which established that natural attenuation had proven to be an effective remedial agent at the SARL. Therefore, the first remediation goal has been met.

Furthermore, the USAF has maintained, and will continue to maintain on a permanent basis, the established site access restrictions and site maintenance program. As a result, the second remediation goal has also been met. Based upon the attainment of these two goals, the next Five Year Review should include water quality monitoring and confirmation of site access restrictions consistent with the May 2002 event. In the interim, the surface seals of each monitoring well should continue to be inspected, and replaced as appropriate.

X. Protectiveness Statement

Because the remedial actions at the SARL are protective, the site is protective of human health and the environment.

XI. Next Review

The sampling activities for the next five-year review for the SARL are expected to be performed in the 2007- 2008 time period, with the Third Five-Year Review Report due five years from the date of signature of this Second Five-Year Review Report.

LIST OF DOCUMENTS REVIEWED

1. 1993 Annual Water Quality Report, Small Arms Range Landfill, Prepared for Minneapolis-St. Paul International Airport Reserve Station, Rust Environment & Infrastructure, March 1994.

2. 1994 Annual Monitoring Report (Final), Small Arms Range Landfill, Prepared for the 934th Airlift Wing, Braun Intertec, July 1995.

3. 1995 Annual Monitoring Report (Final), Small Arms Range Landfill, Prepared for the 934th Airlift Wing, Braun Intertec, April 1996.

4. 1997 Five Year Review, Small Arms Range Landfill, Prepared for 934th Logistics Group/LGC, Braun Intertec, September 1997.

5. 2002 Ten-Year Review, Small Arms Range Landfill, Prepared for 934th LSS/LGC, Braun Intertec, July 2002.

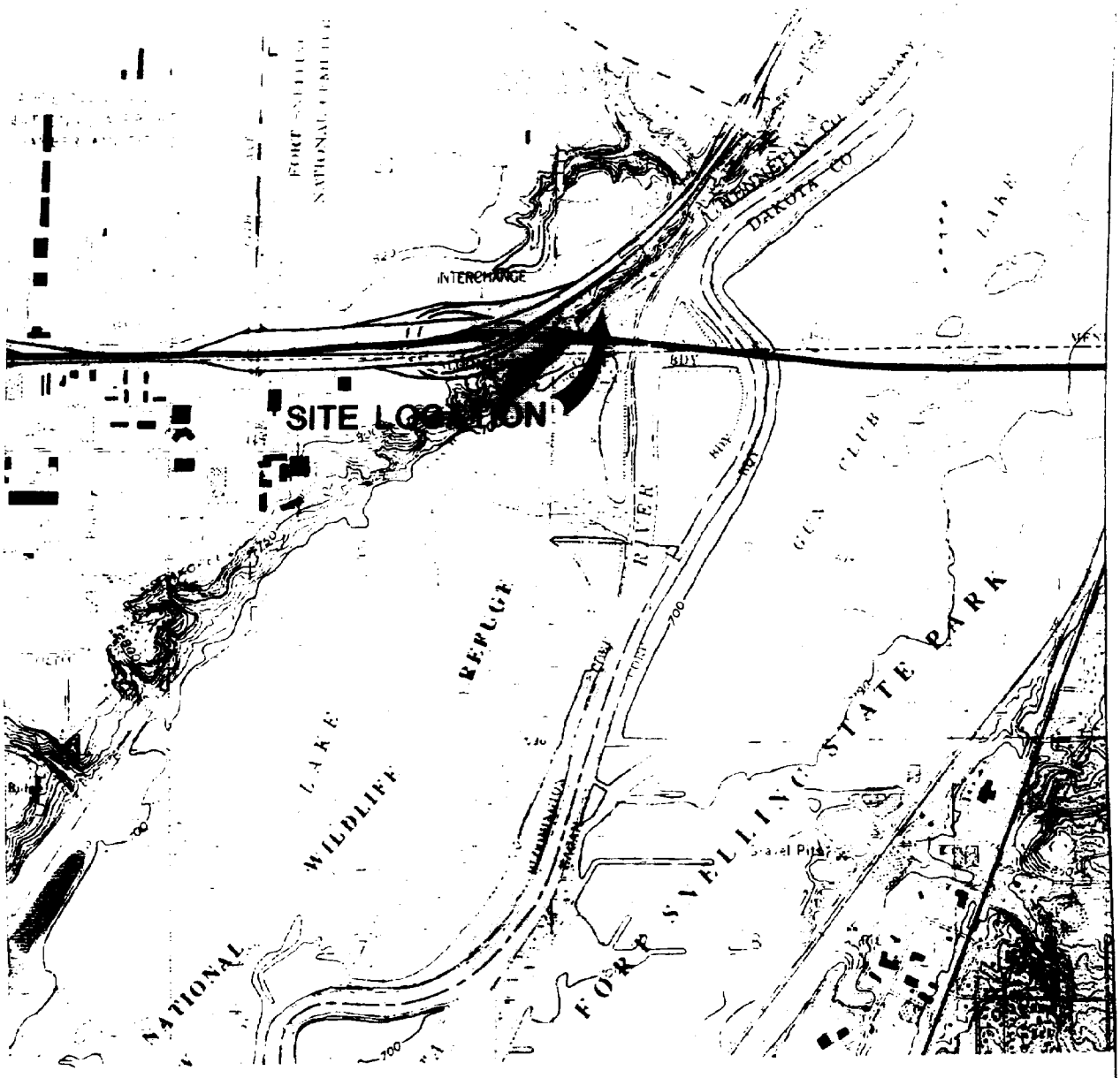
6. Comprehensive Five-Year Review Guidance, USEPA, Office of Emergency and Remedial Response, EPA 540-R-01-007, OSWER No. 9355.7-03B-P, June 2001.

7. Federal Facilities Agreement Under CERCLA Section 120, Small Arms Range Landfill, Minneapolis-St. Paul International Airport Base, November 6, 1989.

8. Record of Decision, Small Arms Range Landfill, Minneapolis-St. Paul International Airport, Air Force Reserve, January 30, 1992.

9. Superfund Final Close-Out Report, Twin Cities Air Force Reserve Base, Small Arms Range Landfill, NPL #054L, Minneapolis-St. Paul International Airport, Minnesota, U.S. EPA, August 29, 1996.

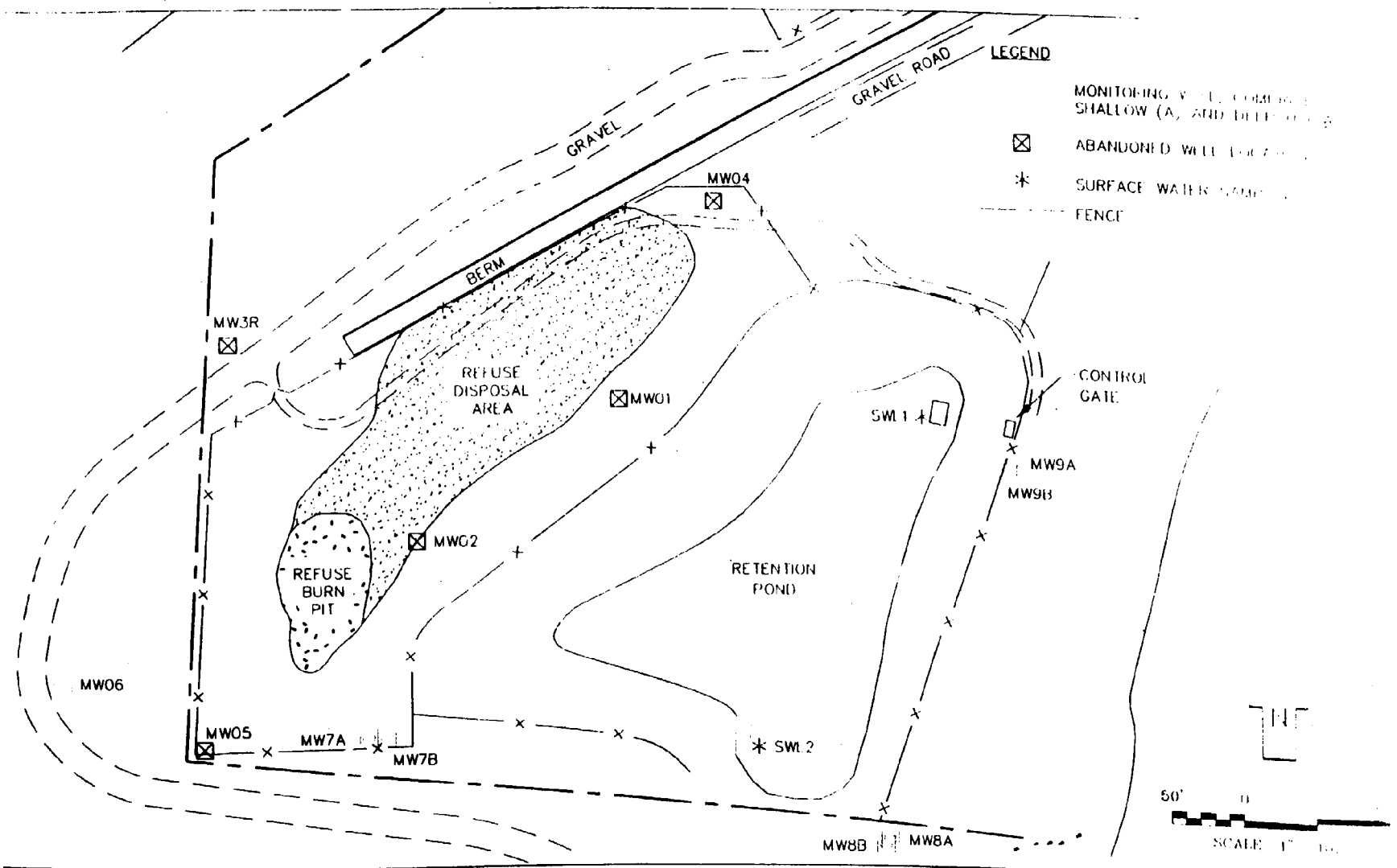
10. Five-Year Review Report, Twin Cities Air Force Reserve Base - Small Arms Range Landfill, Minneapolis, Minnesota, Prepared by U.S. Environmental Protection Agency, Region 5, Chicago, Illinois, April 2, 1998.



BRAUN INTERTEC

SITE LOCATION MAP
SMALL ARMS RANGE LANDFILL
MINNEAPOLIS, ST. PAUL IAP
MINNEAPOLIS, MINNESOTA

INT	REVISION	SHEET
DRAWN BY: BJB	6-4-02	
APP'D BY: GB	6-4-02	OF
JOB No. CMXX-02-0176		
DWG. No. MX70409		FIGURE NO.
SCALE 1:24,000		1



INT	DATE
DRAWN BY: JAC	7-24-97
APP'D BY: RCW	7-25-97
JOB NO. CMXX-02-0176	
DWG. NO. MX20176	SHEET OF
SCALE 1"= 100'	

FIGURE NO. 2

SITE MAP
SMALL ARMS RANGE LANDFILL
MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT
MINNEAPOLIS, MINNESOTA

BRAUN INTERTEC

Table 1

Applicable or Relevant and Appropriate Requirements (ARARs)
For Chemicals of Concern in Groundwater
934th Airlift Wing
Small Arms Range Landfill

	Applicable as of 1992 ROD			Applicable 1995		Applicable 2002		Maximum Concentration 1992 ROD (6)	Maximum Concentration 1993 (6,7)	Maximum Concentration 1994 (6)	Maximum Concentration 1995 (6)	Maximum Concentration 1997 (6)	Maximum Concentration
neter (µg/L)	RAL (1)	MCL (2)	MCLG (3)	HRL (4)	MCL (5)	HRL (4)	MCL (5)						
anics													
ic	0 2	50	--	--	50	--	10	10	9 4	ND	5 0		
ium	0 08	5	--	0 08	4	0 08	4	1 8	2 2	ND	ND		
ium	4	5	5	4	5	4	5	5 1	3 1	6 2	1 4		
ium	100	100	100	100	100	100	100	29 2	393	54 8	252		
er	1000	1300	1300	--	1000	--	1000	96 2	104	34 3	25		
	20	15	0	--	--	--	15 (8)	21 5	21 7	5 4	2		
ury	1	2	--	--	2	--	2	2	ND	0 65	ND		
l	70	--	--	100	100	100	--	143	155	58 3	64 2		
ium	10	50	50	30	50	30	50	12 1	66 9	9 1	20		
	10	--	--	30	--	30	100	5 4	ND	4	1		
dium	20	--	--	50	--	50	--	56 1	96 6	15 7	10		
	700	--	--	2000	5000	2000	5000	148	171	92 7	55		
s													
ene	10	5	0	10	5	10	5	3	0 6	0 8	1		
anone (MEK)	300	--	--	4000	--	4000	--	71	1	5	ND		
ichloroethene (cis-)	70	70	70	70	70	70	70	3	4	1	ND		
ne	1000	1000	1000	1000	1000	1000	1000	1	--	ND	2		
oroethene	30	5	0	30	5	30	5	6	ND	ND	1		
Cs													
outylphthalate	700	--	--	700	--	700	--	2	3	ND	ND		

ecommended Allowable Limit, established by Minnesota Department of Health (MDH), January 1991, revised October 1991
laximum Contaminant Level, established by Environmental Protection Agency (EPA), 40 CFR 141.62, July 1991
laximum Contaminant Level Goal, established by Environmental Protection Agency (EPA), 40 CFR 143.3, July 1991
ealth Risk Limit, established by MDH and replaced RALs in December 1994
evised at 57 FR 31838, July 1992. Arsenic MCL revised February 22, 2002. Nickel MCL remanded 1995
haded concentration exceeds the current ARAR.
rom Rust (1994). 1993 metals concentrations were obtained from both filtered and unfiltered samples; only the unfiltered data
s presented. The 1994 data are from unfiltered samples.
his value is a treatment technique action level.

Analyte not observed with a qualified concentration above instrument detection level (IDL)
Requirement Not Established.

Table 2

Established Compliance and Trigger Levels
For Chemicals of Concern in Groundwater
934th Airlift Wing
Small Arms Range Landfill

arameter (µg/L)	Compliance Level	Trigger Level	Maximum Concentration Reported in 1992 ROD (2)	Maximum Concentration 1993 (1,2)	Maximum Concentration 1994 (2)	Maximum Concentration 1995 (2)	Maximum Concentration 1997 (2)	Max... Concentration ...(2)
norganics								
rsenic	10	20	10	9.4	ND	5.0	ND	
eryllium	1.0	2.0	1.8	2.2	ND	ND	ND	
admium	4.0	8.0	5.1	3.1	6.2	1.4	24.8	
ead	15	30	21.5	21.7	5.4	2	ND	
ickel	70	140	143	155	58.3	64.2	59.2	
elenium	10	20	12.1	66.9	9.1	20	11.7	
anadium	20	40	56.1	96.6	15.7	10	7.7	
OCs								
ichloroethene	5	10	6	ND	ND	1	ND	

1) From Rust (1994). 1993 metals concentrations were obtained from both filtered and unfiltered samples, only the unfiltered data is presented. The 1994 data are from unfiltered samples.
2) Shaded concentrations exceed trigger and/or compliance levels.
ID = Analyte not observed with a qualified concentration above instrument detection level (IDL).

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Table 3

Applicable or Relevant and Appropriate Requirements (ARARs)
For Chemicals of Concern in Surface Water
934th Airlift Wing
Small Arms Range Landfill

	ARARs Reported in 1992 ROD					Applicable ARARs 1995			Applicable ARARs 2002			Maximum Concentration 1992 ROD (10)	Maximum Concentration 1993 (11)	Maximum Concentration 1994	Maximum Concentration [illegible]
...ameter (µg/L)	RAL (1)	MCL (2)	MCLG (3)	Fresh Water Acute Concentration (4)	Minnesota Water Standard (5)	HRL (6)	MCL (7)	Minnesota Water Standard (8)	HRL (6)	MCL (7)	Minnesota Water Standard (9)				
...rganics															
...ium	0.08					0.08	4		0.08	4		0.77	ND	ND	[illegible]
...					300			1363				620 (13)	NA	NA	[illegible]
...d	20	15	0	82	50		15	477		15 (12)	477	3.4	3	4.8	
...er	10			4.1	50	30		22	30	100	22	8.4 (13)	ND	ND	
...nadium	20					50		132	50			6.6	3.9	ND	
...	700			120	5000	7000		375	2000	5000	379	64.2	90.8	57	
...Cs															
...ene	1000	1000		1000	1000	1000	1000	1352	1000	1000	1352	2	2	ND	[illegible]

(1) Recommended Allowable Limit established by Minnesota Department of Health (MDH) January 1991, revised October 1991
(2) Maximum Contaminant Level, established by Environmental Protection Agency (EPA) 40 CFR 141.62, July 1991
(3) Maximum Contaminant Level Goal, established by Environmental Protection Agency (EPA) 40 CFR 143.1 [illegible], 1991
(4) Reference in ROD is "ARARs Q's and A's. Compliance with Federal Water Quality Criteria." USEPA, June 1990
(5) Referenced in ROD as Minnesota Water Standards, 7050.220 November 1990
(6) Health Risk Limit, established by MDH and replaced RAL's in December 1994
(7) Revised at 57 FR 31838, July 1992. Silver value is a Secondary Standard
(8) Maximum Standard, Class 2C Surface Water, Minnesota Rules 7050.0220, April 1994
(9) Maximum Standard, Class 2C Surface Water, Minnesota Rules 7050.0220, September 1995
(10) Shaded concentration exceeds the current ARAR
(11) From Rust (1994). 1993 metals concentrations were obtained from both filtered and unfiltered samples; only the unfiltered data is presented. The 1994 data are from unfiltered samples
(12) This value is a treatment technique action level
(13) Maximum value exceeded ARAR reported in 1992 ROD, but does not exceed current ARAR

ND Analyte not observed with a qualified concentration above instrument detection level (IDL)
Requirement Not Established

...table3.xls

Table 4

Summary of Detected Volatile and Semi-Volatile Organic Compounds
934th Airlift Wing
Small Arms Range Landfill
May 2002

Parameter (µg/L)	CRDL	MW06	MW7A	MW7B	FDMW7B	MW8A	MW8B	MW9A	MW9B	SW1	SW1
VOCs											
acetone	10	-- UR	-- UR	-- UR	-- UR	-- UR	-- UR	-- UR	-- UR	4.7 JR	UJ
naphthalene	ND	-- UJ	-- UJ	0.61 J	-- U	-- U	-- U	-- U	-- U	-- U	U
toluene	1	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	U
SVOCs											
bis(2-ethylhexyl)phthalate	5	-- U	-- U	-- U	-- U	-- U	-- U	49	73	-- U	U

J indicates estimated concentration
U indicates the parameter was tested for but not detected
R unusable value due to major QC deviation
ND indicates CRDL not determined
FD indicates duplicate sample.
RS indicates rinsate sample.
-- indicates compound was not detected above instrument detection limit (IDL).
(1) RS collected at MW9B.

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Table 5

Summary of Detected Inorganic Compounds
934th Airlift Wing
Small Arms Range Landfill
May 2002

Parameter (µg/L)	CRDL	MW06	MW7A	MW7B	FDMW7B	MW8A	MW8B	MW9A	MW9B	SWL1	SWL2	RS (1)
Dissolved:												
antimony	6.0	-- UJ	4.0 J	-- U	-- UJ	3.7 J	-- U	-- U	-- UJ	-- U	-- U	-- UJ
arsenic	10	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U
beryllium	1.0	0.24 B	-- U	0.27 B	0.39 B	0.30 B	0.45 B	0.40 B	0.35 B	0.47 B	0.41 B	0.57 B
chromium	10	3.6 B	2.3 B	4.5 B	4.1 B	5.3 B	4.2 B	2.0 B	4.6 B	-- U	-- U	-- U
copper	25	2.2 B	5.3 B	-- U	-- U	-- U	-- U	8.4 B	2.0 B	3.8 B	2.7 B	1.8 B
lead	3	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U
nickel	40	73	35	3.6 B	2.3 B	300	2.4 B	-- U	29	2.6 B	3.8 B	-- U
selenium	5	-- UJ	1.9 BJ	-- UJ	-- UJ	1.8 BJ	-- UJ	-- U	-- U	-- U	-- U	-- U
vanadium	3	-- U	-- U	-- U	-- U	-- U	-- U	2.2 B	-- U	-- U	-- U	-- U
zinc	20	-- U	15 B	-- U	-- U	-- U	-- U	-- U	20 B	11 B	-- U	-- U
Total:												
antimony	6.0	-- UJ	-- UJ	-- U	-- UJ	-- UJ	-- U	3.6	-- UJ	-- U	2.7 B	-- UJ
arsenic	10	-- U	-- U	-- U	-- U	-- U	-- U	-- U	-- U	5.6 B	-- U	-- U
beryllium	1.0	-- U	-- U	0.22 B	0.19 B	0.75 B	0.46 B	0.33 B	0.19 B	0.41 B	0.27 B	0.43 B
chromium	10	460	11	16	18	220	220	27	1100	5.4 B	2.3 B	3.6 B
copper	25	11	3.4 B	1.9 B	-- U	23	19	3.5 B	22	9.2 B	3.9 B	-- U
lead	3	-- U	-- U	-- U	-- U	5.5	5.3	-- U	-- U	6.0	-- U	-- U
nickel	40	83	36	3.6 B	3.4 B	480	60	3.0 B	53	6.2 B	4.7 B	-- U
selenium	5	-- UJ	-- UJ	-- UJ	-- UJ	1.9 BJ	-- UJ	-- U	-- U	-- U	-- U	-- U
vanadium	3	3.0 B	-- U	-- U	-- U	27	19	-- U	8.6	7.7	3.8 B	-- U
zinc	20	16 B	-- U	-- U	-- U	38	28	14 B	-- U	43	23	-- U
chloride (mg/L)	0.25	190	620	210	100	59	94	34	130	120	140	240

J indicates estimated concentration.
B indicates blank contamination.
U indicates the parameter was tested for but not detected. The associated value is an estimate.
FD indicates duplicate sample.
RS indicates rinsate sample.
-- indicates compound was not detected above instrument detection limit (IDL).
(1) RS was collected at MW9B.

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APPENDIX 1

Classifieds

www.startribune

Thursday, June 5, 2003

203 Legal Notices

PUBLIC NOTICE OF
Five-Year Review
Twin Cities Air Force Reserve
Base Small Arms
Range Landfill
Hennepin County, Minnesota

The U.S. Environmental Protection Agency (EPA) is conducting a five-year review of the Twin Cities Air Force Reserve Base Small Arms Range Landfill site. The site was placed on the National Priorities List (NPL) in 1987. In 1992, the U.S. Air Force Reserve (USAFR) and EPA selected natural attenuation, site maintenance, access restrictions, and intense groundwater and surface water monitoring as the cleanup remedy for the site. Monitoring conducted through 1995 determined that natural attenuation had proven to be an effective remedy. The site was deleted from the NPL in 1996. The remedy allows landfilled materials to remain on-site after the remedy is complete, therefore five-year reviews are required to ensure that the site remains protective of human health and the environment. During the review, EPA studies information on the site, including monitoring data, and inspects the site to make sure it continues to be safe. In 2002, USAFR completed confirmatory site monitoring as part of the second five-year review for the site. A report presenting the results of the monitoring is available for review at:

934th Airlift Wing
Minneapolis-St. Paul
Air Reserve Station
Environmental Section,
Bldg. 744
760 Military Highway
Minneapolis, MN 55450-2100

Further information can be obtained by contacting:

Douglas Yocum
934th Airlift Wing
(612) 713-1909
douglas.yocum@
minneapolis.af.mil

Tom Barounis
EPA Region 5
(312) 353-5577
barounis.tom@epa.gov

THURSDAY, JUNE 5, 2003 — SAINT PAUL PIONEER PRESS

270 Public - Legal Notices

Public Notice of
Five-Year Review Twin Cities
Air Force Reserve Base
Small Arms Range Landfill
Hennepin County, Minnesota

The U.S. Environmental Protection Agency (EPA) is conducting a five-year review of the Twin Cities Air Force Reserve Base Small Arms Range Landfill site. The site was placed on the National Priorities List (NPL) in 1987. In 1992, the U.S. Air Force Reserve (USAFR) and EPA selected natural attenuation, site maintenance, access restrictions, and intense groundwater and surface water monitoring as the cleanup remedy for the site. Monitoring conducted through 1995 determined that natural attenuation had proven to be an effective remedy. The site was deleted from the NPL in 1996. The remedy allows landfilled materials to remain on-site after the remedy is complete, therefore five-year reviews are required to ensure that the site remains protective of human health and the environment. During the review, EPA studies information on the site, including monitoring data, and inspects the site to make sure it continues to be safe. In 2002, USAFR completed confirmatory site monitoring as part of the second five-year review for the site. A report presenting the results of the monitoring is available for review at:
934th Airlift Wing
Minneapolis-St. Paul
Air Reserve Station
Environmental Sect, Bldg. 744
760 Military Highway
Mpls, MN 55450-2100
Further information can be obtained by contacting:
Douglas Yocum
934th Airlift Wing
(612) 713-1909
douglas.yocum@
minneapolis.af.mil

Tom Barounis
EPA Region 5
(312) 353-5577
barounis.tom@epa.gov

APPENDIX 2

DEPARTMENT OF THE AIR FORCE RESERVE COMMAND

01 July 200

MEMORANDUM FOR U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5, SR-6J
Attn: Tom Barounis, RPM
77 West Jackson Boulevard
Chicago, IL 60604-3507

FROM: 934 MSG/CE
760 Military Highway
Minneapolis-St. Paul IAP ARS, MN 55450-2100

SUBJECT: Comments on Draft Second Five-Year Review Report for Twin Cities Air Force Reserve Base, Small Arms Range Landfill

1. The Draft Second Five-Year Review Report for Twin Cities Air Force Reserve Base, Small Arms Range Landfill, has been reviewed. We have the following comments for your consideration:

   a. Page iii, List of Acronyms. The acronym "MS IAP" should be corrected to "MSP IAP."

   b. Page 1, Five-Year Review Summary Form. The author name, "Tom Barongs," appears to be a misspelling of "Tom Barounis." The same misspelling also occurs on pages 5 and 13.

   c. Page 1, Five-Year Review Summary Form. The dates of site inspection during 2002 were 05/07/2002 and 05/08/2002.

   d. Page 4, Introduction, first paragraph. "Fort Sealing State Park" should be "Fort Snelling State Park." The same misspelling also occurs on page 7.

   e. Page 8, Remedy Selection, second paragraph. The reference to "Safe Drinking Water Act Ambient Water Quality Criteria" should be "Clean Water Act Ambient Water Quality Criteria."

   f. Page 9, fourth paragraph. The acronym "MDH" should either be spelled out as Minnesota Department of Health or included in the list of acronyms on page iii.

   g. Page 12, Effectiveness of Access Restrictions and Site Maintenance. The final sentence, addressing compromised surface seals for the monitoring wells, is not completely accurate. The concrete surface seals on wells were found to be cracked during the May 2002 inspection. The seals on four wells required replacement. The concrete seals were subsequently replaced during 2002. During the March 2003 inspection, the seals on all the wells were found to be intact.

2. Please direct any questions to Douglas Yocum, Physical Scientist, at (612) 713-1909, or e-mail at douglas.yocum@minneapolis.af.mil.

DAVID A. SWANBURG
Base Civil Engineer

cc: Administrative Record

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

SR-6J

July 28, 2003

Mr. Douglas Yocum
Physical Scientist
934 SPTG/CEV
760 Military Highway
Minneapolis, MN 55450-2100

Subject: U.S. EPA Response To U.S. Air Force Reserve Comments on the Draft Second Five Year Review Report for the Twin Cities Air Force Reserve Base, Small Arms Range Landfill

Dear Mr. Yocum:

Thank you for your comments on the Draft Second Five Year Review Report for the Twin Cities Air Force Reserve Base, Small Arms Range Landfill (Five Year Review Report). Following are U.S. EPA's responses to your comments. Your comments have been incorporated into the final version of the Five Year Review Report.

a. Page iii, List of Acronyms: The acronym "MS IAP" has been corrected to "MSP IAP."

b. Page 1, Five-Year Review Summary Form: The referenced misspelling has been corrected.

c. Page 1, Five Year Review Summary Form: The dates of site inspection during 2002 have been added to the Summary Form.

d. Page 4, Introduction, first paragraph: "Fort Sealing State Park" has been changed to "Fort Snelling State Park."

e. Page 8, Remedy Selection, second paragraph: The reference to "Safe Drinking Water Act Ambient Water Quality Criteria" has been corrected to "Clean Water Act Ambient Water Quality Criteria."

f. Page 9, fourth paragraph: The acronym "MDH" (Minnesota Department of Health) has been added to the acronym list.

g. Page 12, Effectiveness of Access Restrictions and Site Maintenance: The last paragraph

in the referenced section has been revised to reflect the fact that the cracked concrete well seals that required replacement were replaced during the May 2002 inspection, that the March 2003 inspection of the site verified that the site has been adequately maintained and that the seals on all four wells were found to be intact.

If you have any questions, or require additional information, please feel free to contact me by phone at (312) 353-5577 or by e-mail (barounis.thomas @ epa..gov).

Sincerely,

Tom Barounis

Tom Barounis
Remedial Project Manager